

AMENDMENTS TO THE CLAIMS

1. - 21. (Cancelled)

22. (Previously presented) An infrared-sensitive composition comprising:

(A) 20% to 80% by weight, based on the infrared-sensitive composition, of a polymeric binder consisting of a polymer or mixture of polymers having a weight-average molecular weight in the range of 10,000 to 1,000,000 g/mol, with the proviso that the total acid number of said polymeric binder is 70 mg KOH/g or less; and

(B) a free radical polymerizable system consisting of:

(1) 25% to 75% by weight, based on the infrared-sensitive composition, of at least one polymerizable component selected from unsaturated free radical polymerizable monomers, oligomers which are free radical polymerizable and polymers containing C=C bonds in the backbone and/or in the side chain groups; and

(2) an initiator system having:

(a) 0.05% to 20% by weight, based on the infrared-sensitive composition, of at least one compound capable of absorbing infrared radiation;

(b) 2% to 15% by weight, based on the infrared-sensitive composition, of at least one compound capable of producing radicals; and

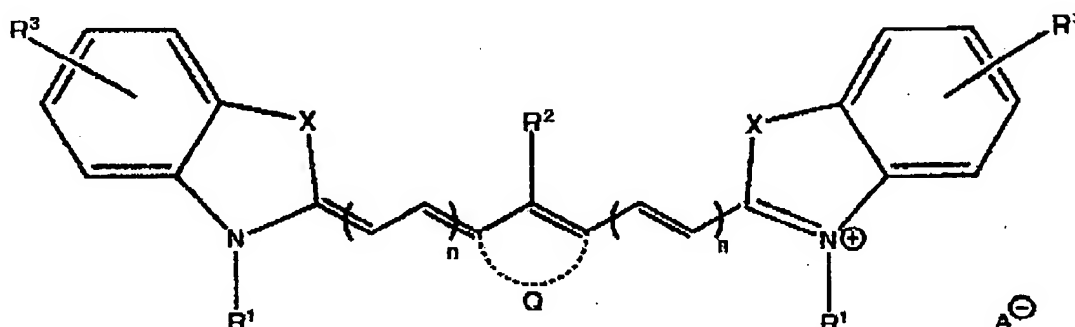
(c) 1% to 10% by weight, based on the infrared-sensitive composition, of at least one polycarboxylic acid having an aromatic moiety substituted with a heteroatom selected from N, O and S and further having at least two carboxyl groups wherein at least one of said carboxyl groups is bonded to said heteroatom via a methylene group.

23. (Original) The composition of claim 22, wherein said compound capable of absorbing infrared radiation is selected from the group consisting of: triarylamine dyes, thiazolium dyes, indolium dyes, oxazolium dyes, cyanine dyes, polyaniline dyes, polypyrrole dyes,

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polythiophene dyes, leuco dyes, phthalocyanine pigments and dyes and a combination thereof.

24. (Previously presented) The composition of claim 22, wherein said compound capable of absorbing infrared-radiation is a cyanine dye represented by the formula:



wherein each X is independently selected from the group consisting of: S, O, NR and C(alkyl)₂;

each R¹ is independently selected from the group consisting of: an alkyl, an alkylsulfonate and an alkylammonium group;

R² is selected from the group consisting of: hydrogen, halogen, SR, SO₂R, OR and NR₂;

each R³ is independently selected from the group consisting of: a hydrogen, an alkyl group, COOR, OR, SR, SO₃⁻, NR₂, a halogen, and an optionally substituted benzofused ring;

A⁻ represents an anion;

-- Q -- represents an optional bridge completing a five- or six-membered carbocyclic ring;

wherein each R is independently selected from the group consisting of: hydrogen, an alkyl and an aryl group; and

wherein each n is an integer independently selected from the group consisting of: 0, 1, 2 and 3.

25. (Previously presented) The composition of claim 22, wherein said compound capable of absorbing infrared radiation is selected from the group consisting of:

2-[2-[2-phenylsulfonyl-3-[2-(1,3-dihydro-1,3,3-trimethyl-2H-indol-2-ylidene)-

ethylidene]-1-cyclohexen-1-yl]-ethenyl]-1,3,3-trimethyl-3H-indoliumchloride;
2-[2-[2-thiophenyl-3-[2-(1,3-dihydro-1,3,3-trimethyl-2H-indol-2-ylidene)-ethylidene]-1-cyclohexen-1-yl]-ethenyl]-1,3,3-trimethyl-3H-indoliumchloride;
2-[2-[2-thiophenyl-3-[2-(1,3-dihydro-1,3,3-trimethyl-2H-indol-2-ylidene)-ethylidene]-1-cyclopenten-1-yl]-ethenyl]-1,3,3-trimethyl-3H-indoliumtosylate;
2-[2-[2-chloro-3-[2-ethyl-(3H-benzthiazole-2-ylidene)-ethylidene]-1-cyclohexen-1-yl]-ethenyl]-3-ethyl-benzthiazolium-tosylate;
2-[2-[2-chloro-3-[2-(1,3-dihydro-1,3,3-trimethyl-2H-indol-2-ylidene)-ethylidene]-1-cyclohexen-1-yl]-ethenyl]-1,3,3-trimethyl-3H-indolium tosylate; and
a combination thereof.

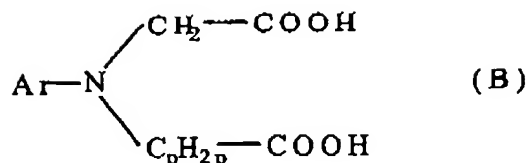
26. (Original) The composition of claim 22, wherein said compound capable of producing radicals is selected from the group consisting of: polyhaloalkyl-substituted compounds, azinium compounds and a combination thereof.

27. (Previously presented) The composition of claim 22, wherein said compound capable of producing radicals is selected from the group consisting of:

N-methoxy-4-phenyl-pyridinium tetrafluoroborate;
tribromomethylphenylsulfone;
1,2,3,4-tetrabromo-n-butane;
2-(4-methoxyphenyl)-4,6-bis(trichloromethyl)-s-triazine;
2-(4-chlorophenyl)-4,6-bis(trichloromethyl)-s-triazine;
2-phenyl-4,6-bis(trichloromethyl)-s-triazine;
2,4,6-tri-(trichloromethyl)-s-triazine;
2,4,6-tri-(tribromomethyl)-s-triazine;
2-hydroxytetradecyloxyphenyl phenyliodonium hexafluoroantimonate;
2-methoxy-4-phenylaminobenzenediazonium hexafluorophosphate and
a combination thereof.

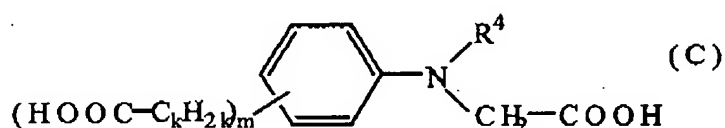
28. (Original) The composition of claim 22, wherein said polycarboxylic acid is selected from the group consisting of:

a compound represented by the formula (B):

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wherein Ar is selected from the group consisting of: an unsubstituted aryl, a mono-substituted aryl and poly-substituted aryl group; and p is an integer from 1 to 5;

a compound represented by the formula (C):



wherein R^4 is selected from the group consisting of: hydrogen and a $\text{C}_1\text{--C}_6$ alkyl group; and wherein each of k and m is independently an integer from 1 to 5; and

a combination of compounds represented by formula (B) and (C).

29. (Previously presented) The composition of claim 22, wherein said polycarboxylic acid is N-phenyliminodiacetic acid.
30. (Original) The composition of claim 22, further comprising one or more contrast-enhancing dyes.
31. (Original) The composition of claim 22, wherein the total acid number of said polymeric binder is 50 mg KOH/g or less.
32. (Previously presented) The composition of claim 22, wherein the total acid number of said polymeric binder is 30 mg KOH/g or less.
33. (Previously presented) The composition of claim 22, wherein the total acid number of said polymeric binder is 10 mg KOH/g or less.
34. (Previously presented) The composition of claim 22, wherein the total acid number of said polymeric binder is 0 mg KOH/g.

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35. (Cancelled)

36. (Previously presented) The composition of claim 22, wherein from about 35 wt% to about 65 wt% of the total weight of the infrared-sensitive composition is the free radical polymerizable system.

37. (Previously presented) The composition of claim 22, wherein from about 3.5 wt% to about 45 wt% of the total weight of the infrared-sensitive composition is the initiator system.

38. (Previously presented) A printing plate precursor, comprising:

a substrate; and

coated on said substrate, an infrared-sensitive composition comprising:

(A) 20% to 80% by weight, based on the infrared-sensitive composition, of a polymeric binder consisting of a polymer or mixture of polymers having a weight-average molecular weight in the range of 10,000 to 1,000,000 g/mol, with the proviso that the total acid number of said polymeric binder is 70 mg KOH/g or less; and

(B) a free radical polymerizable system consisting of:

(1) 25% to 75% by weight, based on the infrared-sensitive composition, of at least one polymerizable component selected from unsaturated free radical polymerizable monomers, oligomers which are free radical polymerizable and polymers containing C=C bonds in the backbone and/or in the side chain groups; and

(2) an initiator system having:

(a) 0.05% to 20% by weight, based on the infrared-sensitive composition, of at least one compound capable of absorbing infrared radiation;

(b) 2% to 15% by weight, based on the infrared-sensitive composition, of at least one compound capable of producing radicals; and

(c) 1% to 10% by weight, based on the infrared-sensitive composition, of at least one polycarboxylic acid having an aromatic moiety substituted with a heteroatom selected from N, O and S and

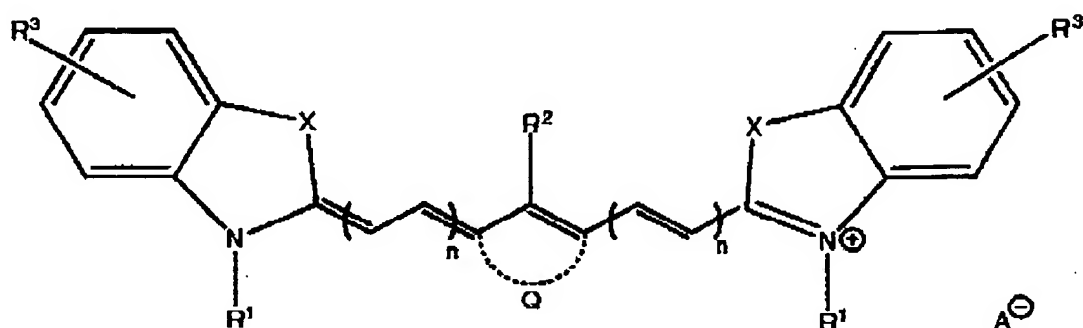
further having at least two carboxyl groups wherein at least one of said carboxyl groups is bonded to said heteroatom via a methylene group.

39. (Original) The printing plate precursor of claim 38, further comprising: an oxygen-impermeable overcoat.
40. – 55. (Cancelled)
56. (Previously presented) The composition of claim 22, wherein said polymer of the polymeric binder is selected from the group consisting of: a polymer derived from an acrylic ester, a cellulose polymer, and a combination thereof.
57. (Previously presented) The composition of claim 22, wherein said polymer of the polymeric binder is poly(methyl methacrylate).
58. (Previously presented) The composition of claim 22, wherein said mixture of polymers of the polymeric binder includes poly(methyl methacrylate).
59. (Previously presented) The composition of claim 22, wherein the polymerizable component of the free radical polymerizable system includes a monomer, oligomer, or prepolymer derived from acrylic or methacrylic acid.
60. (Previously presented) The composition of claim 22, wherein the polymerizable component of the free radical polymerizable system includes an oligomer or prepolymer selected from the group consisting of: urethane acrylates and methacrylates; epoxide acrylates and methacrylates; polyester acrylates and methacrylates; polyether acrylates and methacrylates; and unsaturated polyester resins.
61. (New) The composition of claim 22, wherein said compound capable of absorbing infrared radiation is selected from the group consisting of: a dye, a pigment and a combination thereof.

62. (New) The composition of claim 38, wherein said polymer of the polymeric binder is selected from the group consisting of: a polymer derived from an acrylic ester, a cellulose polymer, and a combination thereof.
63. (New) The composition of claim 38, wherein said polymer of the polymeric binder is poly(methyl methacrylate).
64. (New) The composition of claim 38, wherein said mixture of polymers of the polymeric binder includes poly(methyl methacrylate).
65. (New) The composition of claim 38, wherein the total acid number of said polymeric binder is 50 mg KOH/g or less.
66. (New) The composition of claim 38, wherein the total acid number of said polymeric binder is 30 mg KOH/g or less.
67. (New) The composition of claim 38, wherein the total acid number of said polymeric binder is 10 mg KOH/g or less.
68. (New) The composition of claim 38, wherein the total acid number of said polymeric binder is 0 mg KOH/g.
69. (New) The composition of claim 38, wherein the polymerizable component of the free radical polymerizable system includes a monomer, oligomer, or prepolymer derived from acrylic or methacrylic acid.
70. (New) The composition of claim 38, wherein the polymerizable component of the free radical polymerizable system includes an oligomer or prepolymer selected from the group consisting of: urethane acrylates and methacrylates; epoxide acrylates and methacrylates; polyester acrylates and methacrylates; polyether acrylates and methacrylates; and unsaturated polyester resins.
71. (New) The composition of claim 38, wherein said compound capable of absorbing infrared radiation is selected from the group consisting of: a dye, a pigment and a combination thereof.

72. (New) The composition of claim 38, wherein said compound capable of absorbing infrared radiation is selected from the group consisting of: triarylamine dyes, thiazolium dyes, indolium dyes, oxazolium dyes, cyanine dyes, polyaniline dyes, polypyrrole dyes, polythiophene dyes, leuco dyes, phthalocyanine pigments and dyes and a combination thereof.

73. (New) The composition of claim 38, wherein said compound capable of absorbing infrared-radiation is a cyanine dye represented by the formula:



wherein each X is independently selected from the group consisting of: S, O, NR and C(alkyl)₂;

each R¹ is independently selected from the group consisting of: an alkyl, an alkylsulfonate and an alkylammonium group;

R² is selected from the group consisting of: hydrogen, halogen, SR, SO₂R, OR and NR₂;

each R³ is independently selected from the group consisting of: a hydrogen, an alkyl group, COOR, OR, SR, SO₃⁻, NR₂, a halogen, and an optionally substituted benzofused ring;

A⁻ represents an anion;

-- Q -- represents an optional bridge completing a five- or six-membered carbocyclic ring;

wherein each R is independently selected from the group consisting of: hydrogen, an alkyl and an aryl group; and

wherein each n is an integer independently selected from the group consisting of: 0, 1, 2 and 3.

74. (New) The composition of claim 38, wherein said compound capable of absorbing infrared radiation is selected from the group consisting of:

2-[2-[2-phenylsulfonyl-3-[2-(1,3-dihydro-1,3,3-trimethyl-2H-indol-2-ylidene)-ethylidene]-1-cyclohexen-1-yl]-ethenyl]-1,3,3-trimethyl-3H-indoliumchloride;

2-[2-[2-thiophenyl-3-[2-(1,3-dihydro-1,3,3-trimethyl-2H-indol-2-ylidene)-ethylidene]-1-cyclohexen-1-yl]-ethenyl]-1,3,3-trimethyl-3H-indoliumchloride;

2-[2-[2-thiophenyl-3-[2-(1,3-dihydro-1,3,3-trimethyl-2H-indol-2-ylidene)-ethylidene]-1-cyclopenten-1-yl]-ethenyl]-1,3,3-trimethyl-3H-indoliumtosylate;

2-[2-[2-chloro-3-[2-ethyl-(3H-benzthiazole-2-ylidene)-ethylidene]-1-cyclohexen-1-yl]-ethenyl]-3-ethyl-benzthiazolium-tosylate;

2-[2-[2-chloro-3-[2-(1,3-dihydro-1,3,3-trimethyl-2H-indol-2-ylidene)-ethylidene]-1-cyclohexen-1-yl]-ethenyl]-1,3,3-trimethyl-3H-indolium tosylate; and

a combination thereof.

75. (New) The composition of claim 38, wherein said compound capable of producing radicals is selected from the group consisting of: polyhaloalkyl-substituted compounds, azinium compounds and a combination thereof.

76. (New) The composition of claim 38, wherein said compound capable of producing radicals is selected from the group consisting of:

N-methoxy-4-phenyl-pyridinium tetrafluoroborate;

tribromomethylphenylsulfone;

1,2,3,4-tetrabromo-n-butane;

2-(4-methoxyphenyl)-4,6-bis(trichloromethyl)-s-triazine;

2-(4-chlorophenyl)-4,6-bis(trichloromethyl)-s-triazine;

2-phenyl-4,6-bis(trichloromethyl)-s-triazine;

2,4,6-tri-(trichloromethyl)-s-triazine;

2,4,6-tri-(tribromomethyl)-s-triazine;

2-hydroxytetradecyloxyphenyl phenyliodonium hexafluoroantimonate;

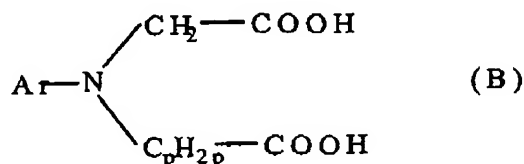
2-methoxy-4-phenylaminobenzenediazonium hexafluorophosphate and

a combination thereof.

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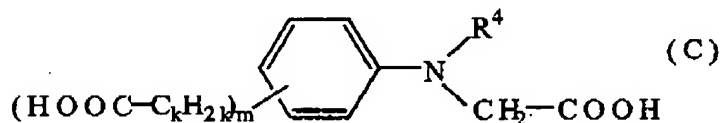
77. (New) The composition of claim 38, wherein said polycarboxylic acid is selected from the group consisting of:

a compound represented by the formula (B):



wherein Ar is selected from the group consisting of: an unsubstituted aryl, a mono-substituted aryl and poly-substituted aryl group; and p is an integer from 1 to 5;

a compound represented by the formula (C):



wherein R^4 is selected from the group consisting of: hydrogen and a C_1 - C_6 alkyl group; and wherein each of k and m is independently an integer from 1 to 5; and

a combination of compounds represented by formula (B) and (C).

78. (New) The composition of claim 38, wherein said polycarboxylic acid is N-phenyliminodiacetic acid.

79. (New) The composition of claim 38, further comprising one or more contrast-enhancing dyes.

80. (New) The composition of claim 38, wherein from about 35 wt% to about 65 wt% of the total weight of the infrared-sensitive composition is the free radical polymerizable system.

81. (New) The composition of claim 38, wherein from about 3.5 wt% to about 45 wt% of the total weight of the infrared-sensitive composition is the initiator system.